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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,089	02/07/2006	Sawako Nakamura	58922US005	2391
32692 7590 11/19/2009 3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427				
EXAMINER				
DESAL, ANISH P				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
11/19/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

LegalUSDocketing@mmm.com

LegalDocketing@mmm.com

### Office Action Summary

**Application No.**

10/595,089

**Applicant(s)**

NAKAMURA, SAWAKO

**Examiner**

ANISH DESAI

**Art Unit**

1794

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-25, 27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-25, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date 09/04/09.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application.
- 6) ☐ Other: \_\_\_\_\_.

***DETAILED ACTION***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed on 09/04/09 after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/04/09 has been entered.
2. Support for the amended claims is found in the specification.
3. The 35 USC Section 103(a) rejections to claims 11 and 26 based on Masaki et al. (JP 10-077308) in view of Akihiro et al. (JP H2000-230162A1) are moot because claims 11 and 26 are cancelled.
4. In view of applicant's amendment and response, the 35 USC Section 103(a) to claims 11-28 based on Masaki et al. (JP 10-077308) in view of Akihiro et al. (JP H2000-230162A1) and Moon et al. (US 4,988,742) are withdrawn. It is noted that applicant has now excluded metal hydrate from the second PSA layer. In view of applicant's exclusion of metal hydrate from the second PSA layer, there is no reason to use the multilayer tape of Moon in Masaki and then exclude metal hydrate from the second PSA as presently claimed.
5. In view of applicant's submission of JP 11-189753 cited in the IDS of 09/04/09, a new 35 USC Section 103(a) rejection is made.

***Claim Objections***

6. Claims 19-35 and 28 are objected to because of the following informalities:

Claim 19 recites "metal hydratedu", it should read "metal hydrate".

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claims 12-25, 27, and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

8. With respect to claims 12 and 19, preamble of these claims recites "a flame-retardant acrylic pressure-sensitive adhesive tape or sheet". However, the body of said claims recites "wherein the second pressure-sensitive adhesive layer is the outer layer of a multi-layer adhesive sheet". Thus, it is unclear as to how the multi-layer sheet is related to the flame-retardant acrylic PSA tape or sheet as recited in the preamble.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 12-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takomi et al. (JP 11-189753) in view of Moon et al. (US 4,988,742) and as evidenced by Blance (US 3,632,412).**

10. Regarding claims 12 and 19, with respect to claim requirement of "a flame-retardant acrylic pressure-sensitive adhesive tape or sheet", abstract and 0010 of Takomi disclose a flame-retardant acrylic PSA tape. As to the claim requirement of a base material, 0012 of Takomi discloses a substrate (base material).

11. With respect to claim requirement of "a halogen free flame retardant-containing a first pressure-sensitive adhesive layer having two sides", "a second pressure-sensitive adhesive layer in contact with at least a portion of at least one side of the first-pressure sensitive adhesive layer", "from 15 to 400 parts by weight of a metal hydrate compound to 100 parts by weight of the first adhesive", and "second pressure-sensitive adhesive...not containing metal hydrate compound", Takomi discloses following:

12. In abstract, Takomi discloses a multilayer adhesive tape that does not generate halogen gas, wherein the multilayer adhesive tape comprises a first adhesive layer on at least one surface of a substrate and at least a second adhesive layer that is disposed on the first adhesive layer. Further, at 0011 Takaomi discloses that in the first adhesive layer, fire retardancy can also be further raised by adding a little metallic compounds such as aluminum hydroxide (metal hydrate). Additionally, at 0019, Takaomi discloses that based on 100 weight% of acrylic polymer, 15wt% of aluminum hydroxide was added to the adhesive. This meets claim requirement of "15 to 400 parts by weight of a metal hydrate compound to 100 parts by weight of the first adhesive". Further, it is noted that Takomi is silent as to teaching the presence of metal hydrate in the second PSA layer. Additionally, based on the disclosure of Takaomi at 0010 and 0013, it is submitted that the first and second PSA layers of Takomi are formed of acrylic polymer.

13. With respect to the claim requirement of the second PSA is the outer layer of a multi-layer adhesive sheet, at 0006, Takomi discloses the presence of second PSA layer on the first PSA layer.

14. With respect to claims 12-14 and 19-21, the different between the claimed invention and the prior art is that Takomi is silent as to teaching the specific composition of first and second PSA layers. Specifically, Takomi is silent as to teaching "40 to 97 parts by weight of an alkyl (meth)acrylate monomer", "60 to 99 parts by weight of an alkyl (meth)acrylate monomer", "3 to 50 parts by weight of a nitrogen-containing

monomer", and "1 to 20 parts by weight of a carboxyl group-containing monomer" as presently claimed.

15. However, Moon discloses an acrylic terpolymer PSA and PSA tapes comprising the acrylic terpolymer. Additionally, Moon discloses "Monomers and tackifiers may be selected such that the adhesive with a wide range of tack, peel and shear properties are possible." (column 3 lines 50-55).

16. With respect to PSA composition, according to Moon "The acrylic terpolymer pressure-sensitive adhesive of the present invention contains an **alkyl acrylate monomer, and two polar copolymerizable monomers**. The alkyl acrylate monomer is preferably unsaturated acrylate ester of non-tertiary alkyl alcohol, the molecules of which have from 6 to 12 carbon atoms. Included within this class of monomers are, for example, isooctyl acrylate...**The polar copolymerizable monomers are selected such that a first polar monomer** is selected from strongly polar monomers such as **acrylic acid [equated to carboxyl group containing monomer], itaconic acid [equated to carboxyl group containing monomer], hydroxyalkyl acrylates, cyanoalkyl acrylates, acrylamides or substituted acrylamides, and a second polar monomer is selected from either strongly polar monomers such as those listed above, or moderately polar monomers such as N-vinyl pyrrolidone [equated to Nitrogen-containing monomer], N-vinyl caprolactam, acrylonitrile, vinyl chloride or diallyl phthalate. The alkyl acrylate ester preferably comprises from about 60 parts to**

**about 96 parts of the terpolymer, more preferably from about 70 parts about 85 parts. The first polar copolymerizable monomer [carboxyl group containing monomer] preferably comprises up to about 10 parts. The second polar copolymerizable monomer [Nitrogen-containing monomer] preferably comprises up to about 20 parts, more preferably from 10 parts to about 15 parts of the photopolymerized terpolymer."** (column 4 lines 65 to column 5 lines 1-26).

17. Additionally, Example 1 of Moon discloses a PSA tape made by photopolymerization of a mixture comprising isooctyl acrylate [alkyl acrylate monomer], acrylic acid [carboxyl group containing monomer], and N-vinylpyrrolidone [Nitrogen-containing monomer].

18. With respect to the claim requirement of alkyl (meth)acrylate monomer, it is submitted that "(meth) acrylate" conventionally encompasses acrylates and methacrylates. It is noted that Moon generally discloses alkyl acrylate based monomers, which is interpreted to meet claim requirement of alkyl (meth)acrylate monomer. Additionally, Blance (US 3,632,412) is relied upon as an evidence to show that it is known in the acrylic adhesive art to use alkyl acrylate and alkyl (meth)acrylate monomers interchangeably. Blance discloses solvent resistant electrical tapes comprising a backing member coated with a PSA composition which is a polymeric product of (A) an ester of **acrylic or methacrylic acid**, (B) a lower alkyl ester of **acrylic or methacrylic acid**; and (C) a hydroxy bearing monomer (abstract).



19. It is noted that Takaomi discloses that adhesive used in his invention can be based on acrylic resins (0010). Moon's acrylic adhesive composition has wide range of tack, peel and shear properties (column 3 lines 50-55). Additionally, with respect to claims 12-14 and 19-21, it is noted that these claims do not exclude a PSA tape that has two adhesive layers wherein both adhesive layers are in contact with each other, and wherein both adhesive layers have same composition.

20. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the acrylic adhesive composition of Moon as evidenced by Blance in the invention of Takaomi as acrylic polymer of the first PSA and the second PSA, so as to use the adhesive having wide range of tack, peel and shear properties.

21. As to claims 15-18 and 22-25, it is submitted that Takaomi is silent as to disclose said claims.

22. However, Moon as set forth above further discloses a multilayer adhesive tape wherein the PSA layers may comprise similar or **different composition** having similar or **different additives** (column 6 lines 65-68 to column 7 lines 1-2). Additionally, at column 8 lines 50-55, Moon discloses plurality of superimposed layers of PSA having differing acrylic matrices. This disclosure of Moon is interpreted the multilayer adhesive tape having a **structure** such as that of contemplated by applicant (i.e. Second PSA layer/First PSA layer/Second PSA layer) is obvious.

23. Additionally, at column 7 lines 5-10, Moon discloses foam like adhesive tape which contains microspheres in the monomer mixture which is then used as a core or backing layer. Further, it is submitted that Takaomi discloses the presence of second PSA layer on the first adhesive (abstract).

24. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the second-PSA layer of Takaomi on both sides of the first PSA layer, wherein the first PSA (halogen-free flame retardant containing PSA layer) is a foam, motivated by the desire to provide strength and conformability to the multilayer adhesive tape.

**25. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takomi et al. (JP 11-189753) in view of Moon et al. (US 4,988,742) and as evidenced by Blance (US 3,632,412) as applied to claims 12 and 19 above, and further in view of Akihiro et al. (JP H2000-230162A1).**

26. Takaomi is silent as to teaching the weight% of metal hydrate as claimed in claims 27 and 28.

27. However, Akihiro discloses a flame-retardant PSA tape having high flame resistance and excellent adhesion at the same time without using a halogen based flame-retardant or antimony, both of which have negative impact on the environment and personal safety (see abstract). The adhesive of Akihiro includes flame resistant

components such as ammonium polyphosphate and aluminum hydroxide in 8:2 to 3:7 ratio and the total amount of these components is 60 to 150 parts per 100 parts of the flammable components (see "Solution"-first and second page). It is submitted that since Akihiro discloses 60-150 parts ammonium polyphosphate and aluminum hydroxide per 100 parts flammable components and given the ratio of ammonium polyphosphate to aluminum hydroxide is 8:2 to 3:7 (combination has 20-70% aluminum hydroxide), Akihiro discloses of using 12 ( $0.2 \times 60$ ) to 105 ( $0.7 \times 150$ ) parts aluminum hydroxide. This disclosure of Akihiro meets claimed requirement of 30 to 200 parts by weight of metal hydrate as presently claimed.

28. It is submitted that the first adhesive of Takomi includes ammonium polyphosphates (abstract). Additionally, Takaomi at 0011 discloses that the first adhesive layer can include hydrated metallic compounds such as aluminum hydroxide.

29. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the aluminum hydroxide (metal hydrate) of Takaomi in the amount including that of the presently claimed invention as taught by Akihiro, motivated by the desire to provide further fire retardancy to the adhesive tape of Takaomi.

***Response to Arguments***

30. Applicant's arguments submitted on 09/04/09 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

31. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Machine translation of JP 09-194797 to Masaki discloses flame retardant adhesive tape.

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANISH DESAI whose telephone number is (571)272-6467. The examiner can normally be reached on Monday-Friday, 8:00AM-4:30PM.

33. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

34. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. D./

Examiner, Art Unit 1794

/Callie E. Shosho/

Supervisory Patent Examiner, Art Unit 1794